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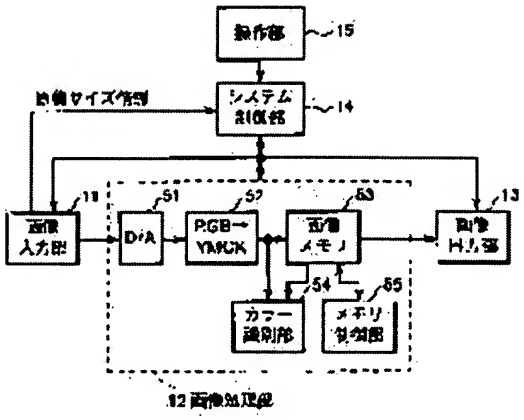
(54) IMAGE PROCESSOR

(57)Abstract:

PROBLEM TO BE SOLVED: To solve a problem that a large capacity memory is required since it is necessary to store the image data of a maximum size in a memory both for B/W and for FC for performing ACS processing.

SOLUTION: A system control part 14 selectively sets a first operating mode (prescanless) and a second operating mode (prescan + main scan) corresponding to original size information. When the first operating mode is set, image data inputted from an image input part 11 by main scan are stored in an image memory 53 and on the basis of the image data stored in this image memory 53, a color identifying part 54 performs ACS processing. When the second operating mode is set, on the other hand, on the basis of image data inputted from the image input part 11 by prescan, the color identifying part 54 performs ACS processing and the image data inputted from the image input part 11 by following main scan are stored in the image memory 53.



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CLAIMS

[Claim(s)]
[Claim 1] An image input means to read the image of a manuscript and to input the image data, It responds to the manuscript size information that it is inputted from a manuscript size input means to input the manuscript size information on said manuscript, and said manuscript size input means. The control means which sets up selectively the 1st mode of operation which performs image reading actuation once about the manuscript of one sheet to said image input means, and the 2nd mode of operation repeated twice, A memory means to store the image data inputted from said image input means at the time of said 1st mode of operation, and to store the image data inputted from said image input means in the 2nd image reading actuation at the time of said 2nd mode of operation, It is based on the image data stored in said memory means at the time of said 1st mode of operation. The image processing system characterized by having a discernment means by which said manuscript identifies monochrome manuscript or a color copy based on the image data inputted from said image input means in the 1st image reading actuation, at the time of said 2nd mode of operation.
[Claim 2] It is the image processing system which has an automatic manuscript delivery means to send a manuscript into said image input section automatically further in an image processing system according to claim 1, and is characterized by said manuscript size input means being a manuscript size detection means to detect the size of the manuscript sent in by said automatic manuscript delivery means.
[Claim 3] An image input means to read the image of a manuscript and to input the image data, A memory means to store the image data inputted from said image input means, The 1st mode of operation which performs image reading actuation once about the manuscript of one sheet to said image input means when the grasp result of an availability grasp means to grasp the availability of said memory means, and said availability grasp means is more than predetermined capacity is set up. The control means which sets up the 2nd mode of operation which repeats image reading actuation twice about the manuscript of one sheet at the time under of predetermined capacity, It is based on the image data stored in said memory means at the time of said 1st mode of operation. The image processing system characterized by having a discernment means by which said manuscript identifies monochrome manuscript or a color copy based on the image data inputted from said image input means in the 1st image reading actuation, at the time of said 2nd mode of operation.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the image processing system equipped with the ACS (Auto Color Select) processing facility to which especially the manuscript of a processing object sorts out monochrome manuscript or a color copy automatically about image processing systems which read the image of a manuscript and process the image data, such as a copying machine and facsimile apparatus.
[0002]
[Description of the Prior Art] In image processing systems, such as a digital color copying machine, from the manuscript of a processing object identifying monochrome manuscript or a color copy, before performing actuation (this scan is called hereafter) which reads a manuscript image in order to form an image actually, actuation (a PURISU can is called hereafter) which reads a manuscript image is performed, and ACS processing which sorts out monochrome manuscript or a color copy based on the image data obtained by this PURISU can is performed.
[0003] Thus, when performing this ACS processing, a PURISU can will be performed, monochrome manuscript or a color copy will be decided, and a manuscript image will be anew captured with this scan after that for image formation. Therefore, since two image reading actuation, a PURISU can and this scan, is needed to the manuscript of one sheet when ACS processing is performed, compared with the case where ACS processing is not performed, copy time amount increases substantially, and productivity falls greatly.
[0004] On the other hand, the image processing system which makes a PURISU can unnecessary and was made to realize ACS processing is proposed (for example, refer to JP,9-261417,A). That is, in an image processing system given in the official report concerned, the image information of a manuscript is read, and ACS processing is carried out in image sink reading mode, storage maintenance of the judgment result is carried out, the PURISU can after copy actuation initiation is made unnecessary by performing copy actuation using the judgment result, and the productivity at the time of copying continuously the manuscript of two or more sheets (page) with which monochrome manuscript / color copy was intermingled is made raise.
[0005]
[Problem(s) to be Solved by the Invention] however, with the above-mentioned conventional technique made unnecessary, a PURISU can From the ability of monochrome manuscript / color copy not to be distinguished, unless it is after reading all the manuscript images of one sheet in order to realize the function of ACS processing Since it was necessary to have the memory of capacity in which the image data of the maximum size (generally [in a copying machine] A3 size) of a manuscript can both be stored the object for B/W (black and white), and for FC (full color), the mass thing had to be used as memory. Furthermore, in copying continuously the manuscript for two or more pages with which monochrome manuscript / color copy is intermingled, the memory of the capacity which can store the image data for B/W and the image data for FC by two or more pages is needed.

[0006] This invention is made in view of the above-mentioned technical problem, and the place made into the object is to offer the image processing system which can realize ACS processing which made the PURISU can unnecessary, even if it does not have only the memory space in which the image data of the maximum size of a manuscript can both be stored the object for black and white, and for colors.
[0007]
[Means for Solving the Problem] An image input means for the image processing system by this invention to read the image of a manuscript, and to input the image data, It responds to the manuscript size information that it is inputted from a manuscript size input means to input the manuscript size information on a manuscript, and this manuscript size input means. The control means which sets up selectively the 1st mode of operation which performs image reading actuation once about the manuscript of one sheet to an image input means, and the 2nd mode of operation repeated twice, A memory means to store the image data inputted from an image input means at the time of the 1st mode of operation, and to store the image data inputted from an image input means in the 2nd image reading actuation at the time of the 2nd mode of operation, Based on the image data stored in the memory means at the time of the 1st mode of operation, the manuscript of a processing object has composition equipped with a discernment means to identify monochrome manuscript or a color copy, based on the image data inputted from an image input means in the 1st image reading actuation at the time of the 2nd mode of operation.
[0008] In the image processing system of the above-mentioned configuration, a control means sets up selectively the 1st mode of operation and 2nd mode of operation to an image input means according to the manuscript size information that it is inputted from a manuscript size input means. At the time of setting out of the 1st mode of operation, the image data inputted from an image input means in one image reading actuation (this scan) is stored in a memory means, and a discernment means performs ACS processing based on the image data stored in this memory means. On the other hand, at the time of setting out of the 2nd mode of operation, a discernment means performs ACS processing based on the image data inputted from an image input means in the 1st image reading actuation (PURISU can), and the image data inputted from an image input means in the 2nd subsequent image reading actuation (this scan) is stored in a memory means.
[0009] An image input means for other image processing systems by this invention to read the image of a manuscript, and to input the image data, A memory means to store the image data inputted from this image input means, The 1st mode of operation which performs image reading actuation once about the manuscript of one sheet to an image input means when the grasp result of an availability grasp means to grasp the availability of this memory means, and this availability grasp means is more than predetermined capacity is set up. The control means which sets up the 2nd mode of operation which repeats image reading actuation twice about the manuscript of one sheet at the time under of predetermined capacity, Based on the image data stored in the memory means at the time of the 1st mode of operation, the manuscript of a processing object has composition equipped with a discernment means to identify monochrome manuscript or a color copy, based on the image data inputted from an image input means in the 1st image reading actuation at the time of the 2nd mode of operation.
[0010] In other image processing systems of the above-mentioned configuration, an availability grasp means grasps the availability of a memory means which stores the image data inputted from an image input means, and gives the grasp result to a control means. A control means sets up the 1st mode of operation to an image input means, when the grasp result is more than predetermined capacity, and it sets up the 2nd mode of operation at the time under of predetermined capacity. At the time of setting out of the 1st mode of operation, the image data inputted from an image input means in one image reading actuation (this scan) is stored in a memory means, and a discernment means performs ACS processing based on the image data stored in this memory means. On the other hand, at the time of setting out of the 2nd mode of operation, a discernment means performs ACS processing based on the image data inputted from an image input means in the 1st image reading actuation (PURISU can), and the image data inputted from an image input means in the 2nd subsequent image reading actuation (this scan) is stored in a memory means.

[0011]
[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail with reference to a drawing. Drawing 1 is the block diagram showing the outline of the configuration of the image processing system concerning 1 operation gestalt of this invention.
[0012] The image processing system which applies to this operation gestalt in drawing 1 has the composition of having the control unit 15 which the system control section 14 and the user who manage control of the image input section 11 which inputs image data, the image-processing section 12 which performs various processings to the image data inputted from this image input section 11, the image output section 13 which outputs the image data processed in this image-processing section 12, and this whole equipment operate.
[0013] When the image processing system of the above-mentioned configuration is applied to for example, a digital color copying machine, it becomes the image reader into which the image input section 11 reads an image in a manuscript, and inputs the image data, and becomes image formation equipment with which the image output section 13 forms and outputs the image based on the image data outputted from the image-processing section 12 to record media, such as a form. Hereafter, the case where it applies to a digital color copying machine shall be taken and explained to an example.
[0014] Drawing 2 is the outline block diagram showing the example of the image reader used as the image input section 11. In addition, it has the composition that the image reader 11 concerning this example was equipped with the automatic manuscript feed gear (ADF) 20 which sends a manuscript into the reading station of the image reader 11 automatically.
[0015] First, in the automatic manuscript feed gear 20, the manuscript 22 set on the manuscript tray 21 is drawn with a pickup roller 23, and is sent one sheet at a time into the large roller 26 via the PURIREJI roller 25 with the manuscript separation roller 24. And after the conveyance direction is reversed with this large roller 26, it is discharged with the manuscript blowdown roller 27. Various kinds of rollers of large roller 26 grade make the conveyance motor 28 the driving source.
[0016] On the manuscript tray 21, the manuscript tray sensor 29 between a pickup roller 23 and the manuscript separation roller 24 the empty sensor 30 Between the manuscript separation roller 24 and the PURIREJI roller 25, the pickup sensor 31 and the 1st PURIREJI sensor 32 Between the PURIREJI roller 25 and the large roller 26, manuscript REJISENSA 35 is allotted to the part of the large roller 26, and the manuscript blowdown sensor 36 is arranged for the manuscript size sensor 33 and the 2nd PURIREJI sensor 34 before the manuscript blowdown roller 27, respectively.
[0017] The image reader 11 is constituted by the optical system which has the light source unit 38 arranged under the contact glass 37, the 1st, 2nd, and 3rd mirror 39, 40, and 41, the image formation lens 42, and image sensors 43. As image sensors 43, a CCD (Charge Coupled Device) linear sensor (line sensor) is used, for example.
[0018] In the image reader 11 of the above-mentioned configuration, the image of the manuscript laid on contact glass 37 is read by being reduced with the image formation lens 42, and carrying out image formation on the image pick-up side of image sensors 43, after an optical-path change of the reflected light from the manuscript side based on the exposure light from the light source unit 38 is made by the 1st mirror 39, the 2nd mirror 40, and the 3rd mirror 41. These image sensors 43 carry out photo electric translation of the manuscript image per pixel, and output it as an analog picture signal of R(red) G (Green) B (blue).
[0019] Next, the image-processing section 12 is explained using drawing 1 . In the image-processing section 12, after the RGB analog picture signal inputted from the image input section 11 is changed into a RGB digital picture signal with A/D converter 51, color conversion of it is carried out by the RGB->YMCK conversion circuit 52 at Y(yellow) M(Magenta) C(cyanogen) K (black). In addition, although it is omitting illustrating here, processing of sample hold, output magnification, etc. is performed in the preceding paragraph of A/D converter 51, and processing of a shading compensation etc. is performed in the latter part of A/D converter 51.
[0020] YMCK digital image data is once stored in the image memories 53, such as RAM. Based on the YMCK image data to which the color discrimination decision circuit 54 is supplied from the RGB-

>YMCK conversion circuit 52, or the YMCK digital image data stored in the image memory 53, the manuscript for reading performs discernment (ACS processing) of monochrome manuscript or a color copy. The configuration is not asked that what is necessary is just the thing of a configuration of that monochrome manuscript / color copy can be sorted out as a color discrimination decision circuit 54, for example based on YMCK digital image data. The discernment result of the color discrimination decision circuit 54 is supplied to the system control section 14.

[0021] The memory control section 55 has the composition of also having the function (availability grasp means) to grasp the availability of an image memory 53 while controlling writing/read-out of the image data to an image memory 53. The availability information on the image memory 53 which the memory control section 55 has grasped is supplied to the system control section 14.

[0022] The system control section 14 is constituted by the microcomputer etc. and controls each actuation of the image input section 11, the image-processing section 12, and the image output section 13. Various kinds of command information, such as manuscript size information according [manuscript size information (detection information on the manuscript size sensor 33 of drawing 2)] to a user's assignment input, is further given from a control unit 15 from the image input section 11 at this system control section 54 out of the discernment result of the color discrimination decision circuit 54, or the grasp result of the memory control section 55.

[0023] The system control section 14 judges whether a PURISU can is performed based on these information, and performs each control of the reading actuation (the 2nd mode of operation) in reading actuation (the 1st mode of operation) / with the PURISU can in the case of PURISU can loess (only this scan) (PURISU can + book scan) based on the decision result. The procedure of the concrete control is explained to a detail later.

[0024] The YMCK digital image data by which reading appearance was carried out from the image memory 53 is supplied to the image output section 13. As point ** was carried out, when application to a digital color copying machine is considered as the image output section 13, the image formation equipment which forms and outputs the image based on the YMCK digital image data supplied from an image memory 53 to record media, such as a form, is used.

[0025] Hereafter, the concrete configuration of the image formation equipment used as the image output section 13 is explained. Drawing 3 is the outline block diagram showing an example of the image formation equipment of a tandem system.

[0026] This image formation equipment (image output section) 13 has the composition of having the form feed zone 61, the manual paper feed section 62, the form conveyance belt 63, the scan optical system 64, the image formation engines 65Y, 65M, 65C, and 65K, the fixation section 66, and the form blowdown section 67 so that clearly from drawing 3 .

[0027] In the image formation equipment 13 of the above-mentioned configuration, the form feed zone 61 supplies the form of two or more sizes to the form conveyance belt 63 selectively from each form tray 68. Moreover, the manual paper feed section 62 supplies the form concerned to the form conveyance belt 63, when the form of sizes other than the paper size contained by each tray 68 is set. The conveyance belt 63 conveys the form supplied from the form feed zone 61 or the manual paper feed section 62 to the image formation engines 65Y, 65M, 65C, and 65K.

[0028] The scan optical system 64 forms the electrostatic latent image corresponding to a manuscript image by making for example, semiconductor laser LD into the light source, and scanning and exposing in a laser beam according to the YMCK digital image data supplied from the image-processing section 12 (see drawing 1) on the front face of each photo conductors (drum) 69Y, 69M, 69C, and 69K of a record medium 65Y, 65M, 65C, and 65K, i.e., image formation engines.

[0029] The image formation engines 65Y, 65M, 65C, and 65K are arranged in order for every color material of Y, M, C, and K from the right-hand side of drawing in the conveyance direction of the form conveyance belt 63, and develop photo conductors 69Y, 69M, and 69C and the electrostatic latent image on 69K in a toner image, and make a form imprint the toner image. Thus, the form with which the imprint of four colors of Y, M, C, and K was performed one by one is discharged out of equipment from the form blowdown section 67, after being sent to the fixation section 66 and performing melting

fixation of a toner image.
[0030] In addition, although the image formation equipment of a tandem system was taken and explained to the example as the image output section 13, it is not restricted to this here.
[0031] By the way, generally in the digital color copying machine, each tray of B5, A4, B4, and A3 size is equipped as a form tray 68. And as the operating frequency, if an activity in office is assumed, for example, the activity of A4 size will be overwhelmingly high and the activity of A3 size, especially A3 size using the automatic manuscript feed gear 20 will be considered to be extremely low compared with A4 size etc.
[0032] In this invention, paying attention to this point, at the time of the copy of for example, A4 size with high operating frequency, ACS processing is performed by PURISU can loess, and the point that operating frequency is low and of having been made to perform ACS processing is set to one of the descriptions by the PURISU can, for example at the time of the copy of A3 size.
[0033] In drawing 1 , if manuscript A4 is specified by the user from a control unit 15 or manuscript size is detected by the manuscript size sensor 33 (see drawing 2) in the case of the power feed of the manuscript by the automatic manuscript feed gear 20, specifically, the manuscript size information will be supplied to the system control section 14.
 [0034] Then, the system control section 14 will carry out actuation control of the image input section 11, the image-processing section 12, and the image output section 13 that ACS processing should be performed by PURISU can loess, if the manuscript size information is A4 size information (the 1st mode of operation). After changing into the image data of YKCK the image data of RGB inputted from the image input section 11 with this scan in the image-processing section 12 at this time, processing which stores the image data of K in the image memory 53 as an object for B/W (black and white), respectively is performed in each image data of YMCK as an object for FC (full color).
[0035] And when this scan is completed, based on the image data stored in the image memory 53, the color discernment section 54 performs ACS processing from which a manuscript discriminates a color copy or monochrome manuscript, and gives the discernment result to the system control section 14. The system control section 14 controls the memory control section 55 that reading appearance of the image data of K which stores in an image memory 53 each image data of YMCK stored in an image memory 53 as an object for FC if the discernment result is a color copy as an object for B/W if it is monochrome manuscript should be carried out, respectively.
[0036] On the other hand, if manuscript size information is A3 size information, actuation control of the image input section 11, the image-processing section 12, and the image output section 13 will be carried out that the system control section 14 should perform ACS processing by the PURISU can (the 2nd mode of operation). In the 2nd mode of operation, processing which first changes into the image data of YKCK the image data of RGB inputted from the image input section 11 in the image-processing section 12 at the time of a PURISU can is performed.
[0037] And when a PURISU can is completed (at the event of all the manuscript images of one sheet being read), the color discernment section 54 performs ACS processing from which a copy manuscript discriminates a color copy or monochrome manuscript from the RGB->YMCK conversion circuit 52 based on the image data of YMCK by which the direct input was carried out, and gives the discernment result to the system control section 14. Then, the system control section 14 carries out actuation control of the image input section 11 that it should shift to ACS processing succeedingly at this scan.
[0038] Since the color copy or monochrome manuscript has already become clear by ACS processing at the time of this scan, in the image-processing section 12, in the case of a color copy, each image data of YMCK is supplied to the image output section 13 via an image memory 53, and, in the case of monochrome manuscript, it is carried out to the basis of control of the processing which supplies the image data of K to the image output section 13 via an image memory 53 of the memory control section 55.
[0039] As mentioned above, while performing ACS processing by PURISU can loess in the case of manuscript size with high operating frequency, in the case of manuscript size with low operating frequency, by having been made to perform ACS processing by the PURISU can Even if it does not use

the thing of only the memory space which can store the image data for FC corresponding to the scanning maximum manuscript size, and the image data for B/W like before as an image memory 53, the ACS processing by PURISU can loess is realizable. That is, the memory space of an image memory 53 can be reduced compared with the conventional technique.

[0040] When manuscript size with high operating frequency was made into A4 size as an example and manuscript size with low operating frequency is made into A3 size, If the thing of only the memory space which can store the image data for FC corresponding to A3 size (each image data of YMCK) as an image memory 53 is prepared Since the image data for FC at the time of this scan of A4 size and the image data for B/W are fully storable, ACS processing of PURISU can loess can be realized and productivity can be secured.

[0041] However, in the case of A3 size, since it is accompanied by the PURISU can, copy time amount becomes long, and productivity falls. However, even if the operating frequency of A3 size is low, and the productivity of A3 size falls somewhat since there are very few especially opportunities to copy the manuscript of A3 size continuously using the automatic manuscript feed gear 20 as point ** was carried out, the direction of the effectiveness that the memory space of an image memory 53 can be reduced is size.

[0042] In this invention, further, the availability of an image memory 53 is grasped and the point of having been made to perform ACS processing (the 1st mode of operation) by PURISU can loess and ACS processing (the 2nd mode of operation) by the PURISU can alternatively according to the availability is also set to one of the descriptions.

[0043] When specifically copying the manuscript of manuscript size with the high operating frequency on condition of the ACS processing by PURISU can loess (this example A4 size), and there are few availabilities of an image memory 53, productivity is raised by performing ACS processing by the PURISU can. This serves as a useful function, when copying the manuscript of two or more sheets continuously using the automatic manuscript feed gear 20.

[0044] Here, the case where two or more manuscripts of for example, A4 size are copied continuously is considered. When performing ACS processing by PURISU can loess continuously, the condition that all the image data inputted is unstorable in the image memory 53 from a limitation being in the memory space of an image memory 53 even if the image data of the manuscript of two or more sheets is continuously inputted from the image input section 11 occurs. In such a case, it must wait to make only the availability which can store the image data for FC of one A4 size (each image data of YMCK), and the image data for B/W (image data of K) at least in an image memory 53, and becomes the cause to which this reduces productivity.

[0045] The availability of an image memory 53 is grasped. On the other hand, when there are few the availabilities By setting up the 2nd mode of operation and performing ACS processing by the PURISU can From the ability of monochrome manuscript / color copy to be distinguished even if it does not store image data in an image memory 53 in the processing concerned Since the PURISU can could be started early and ACS processing is moreover completed before this scanning initiation rather than an opening is made in an image memory 53, only the part can improve productivity rather than the case of the PURISU can loess which waits for an image memory 53 to be vacant.

[0046] In addition, in an image memory 53, image data is inputted from the image input section 11, by being written in in order, the availability decreases and the availability increases by carrying out reading appearance of the image data stored in reverse, and outputting it to the image output section 13.

[0047] Here, when the manuscript of two or more sheets is copied continuously and image data ** of the manuscript of the 4th sheet is written in an image memory 53 as an example, the case where an availability is completely lost to an image memory 53 is taken for an example, and it explains using the timing chart of drawing 4 .

[0048] First, when the 1st mode of operation (PURISU can loess) is performed continuously and reading appearance of the image data ** of the manuscript of the 4th sheet is carried out from an image memory 53 in (A) It stands by without performing this scan to the manuscript of the 5th sheet until only the availability which can store the image data for FC of one A4 size (each image data of YMCK) and the

image data for B/W (image data of K) in an image memory 53 at least is made.
[0049] And reading appearance of the image data ** of the manuscript of the 4th sheet is carried out from an image memory 53, when the image data for FC of one A4 size and the image data for B/W can be stored in an image memory 53 at least and the opening of **** is made, this scan of a manuscript of the 5th sheet is performed, and the image data ** is stored in an image memory 53. Henceforth, the same processing is repeated in order for every manuscript. Here, time amount t is delay time after the image entry of data of a certain manuscript is completed until the output of the image data is started.
[0050] Next, about (B), when performing the 2nd mode of operation (PURISU can + book scan), in order to make an understanding easy here, the continuation copy of monochrome manuscript is taken and explained to an example.
[0051] When image data ** of the manuscript of the 4th sheet is written in an image memory 53, even if an availability is completely lost to an image memory 53, in the ACS processing by the PURISU can, ACS processing based on the image data which performed and read the PURISU can to the manuscript of the 5th sheet is performed, without waiting for an opening to arise in an image memory 53, since it is not necessary to store image data in an image memory 53.
[0052] Here, if it assumes that the time amount which a PURISU can and ACS processing take is shorter than delay time t, a PURISU can and ACS processing will be performed within delay time t.
[0053] By this example, since the continuation copy of monochrome manuscript is taken and explained to an example, by the ACS processing to the manuscript of the 5th sheet, the judgment of monochrome manuscript is made with a natural thing. And this scan to the manuscript of the 5th sheet is succeedingly carried out to this ACS processing. Since there should just be an opening of only capacity which can store the image data for B/W (image data of K) in an image memory 53 since a copy manuscript is monochrome manuscript at this time, in parallel to reading image data ** of the manuscript of the 4th sheet from an image memory 53, image data ** of the manuscript of the 5th sheet can be written in an image memory 53.
[0054] Henceforth, it is the continuation copy of monochrome manuscript, and since there should just be an opening of only capacity which can store the image data for B/W (image data of K) in an image memory 53, it repeats until it can store the image data for FC of one A4 size, and the image data for B/W in an image memory 53 at least and the opening of the memory space of **** can perform a PURISU can + book scan for every manuscript. And if the opening of the memory space concerned is made in an image memory 53, it will shift to activation of the 2nd mode of operation which performs PURISU can loess continuously.
[0055] In the timing chart of drawing 4 , when image data ** of the manuscript of the 4th sheet is written in an image memory 53 Although the case where it returns to the 1st mode of operation (A) which performs PURISU can loess continuously is taken for the example when an availability is completely lost to an image memory 53, it shifts to the 2nd mode of operation (B) accompanied by a PURISU can from the event and the output of image data ** of a manuscript of the 6th sheet is completed Thus, by using together the ACS processing by the PURISU can, it is at the image data **'s of manuscript output termination event of the 6th sheet, and only time amount T can shorten copy time amount. This means that the productivity at the time of copying the manuscript of two or more sheets continuously can be improved.
[0056] In addition, in order to make an understanding easy, the case where monochrome manuscript was copied in succession was taken and explained to the example here, but when copying a color copy continuously, or when copying continuously the manuscript of two or more sheets with which monochrome manuscript and a color copy are intermingled, it can apply similarly.
[0057] From only the availability which can store the image data for FC (each image data of YMCK) with this scan by performing ACS processing by the PURISU can in the case of a color copy being in an image memory 53 Although it is not the case of monochrome manuscript, productivity can be improved rather than the case where only the availability which can always store the image data for FC (each image data of YMCK) and the image data for B/W (image data of K) performs only required PURISU can loess continuously.

[0058] Drawing 5 is a flow chart which shows an example of a series of procedure in the image processing system concerning this operation gestalt. This processing of a series of is performed by the system control section 14 of drawing 1 .
[0059] In this example of processing, while performing ACS processing by PURISU can loess at the time of the copy of manuscript size with high operating frequency and performing ACS processing by the PURISU can at the time of the copy of manuscript size with low operating frequency, by processing of PURISU can loess, the availability of an image memory 53 is grasped, and when there are few the availabilities, processing which uses a PURISU can together is performed.
[0060] In the flow chart of drawing 5 , first, if the start key of a control unit 15 is pushed by the user (step S11), the manuscript size for a copy will be determined based on the manuscript size information by the user input (UI input) in a control unit 15, or the manuscript size information from the manuscript size sensor 33 (see drawing 2) of the automatic manuscript feed gear 20 (step S12).
[0061] And it judges whether it is the memory in which an image memory 53 has only the memory space which can store the image data for FC for at least one sheet of the determined manuscript size (each image data of YMCK), and the image data for B/W (image data of K) (step S13). If the image memory 53 has the memory space concerned, it will judge whether there is only any availability which can store the image data for FC for at least one sheet of the manuscript size continuously determined as the image memory 53 and the image data for B/W (step S14).
[0062] Here, if the availability concerned is in an image memory 53, it will judge whether ACS processing by PURISU can loess was carried out (step S15), and all the copies for copy number of sheets were completed continuously (step S16) and the copy for copy number of sheets will not be completed, it repeats until all the copies for copy number of sheets end a series of processings returned and mentioned above to step S12.
[0063] When it judges with on the other hand the image memory 53 not having only the memory space which can store the image data for FC, and the image data for B/W at step S13, or when it judges with there being only no availability which can store the image data for FC and the image data for B/W in the image memory 53 at step S14 The PURISU can for ACS processing is carried out (step S17), subsequently this scan is carried out (step S18), and it shifts to step S16 after an appropriate time.
[0064] By performing ACS processing by PURISU can loess at the time of the copy of manuscript size with high operating frequency, and performing ACS processing by the PURISU can at the time of the copy of manuscript size with low operating frequency, as mentioned above When the scanning maximum manuscript size is made into manuscript size with low operating frequency, even if it does not use the thing of only the memory space which can store the image data for FC corresponding to the scanning maximum manuscript size, and the image data for B/W as an image memory 53 The ACS processing by PURISU can loess is realizable.
[0065] furthermore, in processing of the PURISU can loess in the case of manuscript size with high operating frequency By grasping the availability of an image memory 53 and having been made to perform processing which uses a PURISU can together when there are few the availabilities Since the PURISU can could be started and ACS processing is moreover completed before this scanning initiation before an opening is made in an image memory 53 in case the manuscript of two or more sheets is copied continuously, only the part can shorten copy time amount and can improve productivity.
[0066] In this example of processing, ACS processing (the 1st mode of operation) is performed by PURISU can loess at the time of the copy of manuscript size with high operating frequency. By the 1st mode of operation, grasp the availability of an image memory 53 as the processing which performs ACS processing (the 2nd mode of operation) by the PURISU can at the time of the copy of manuscript size with low operating frequency, and although processing which uses a PURISU can together when there are few the availabilities is performed in parallel It is also possible for it to be made to perform only one of processings.
[0067]
[Effect of the Invention] As explained above, even if there is only no memory space which can store the image data for FC corresponding to the scanning maximum manuscript size and the image data for B/W,

according to this invention, the ACS processing by PURISU can loess is realizable by having set up selectively the 1st mode of operation which performs ACS processing by PURISU can loess according to manuscript size, and the 2nd mode of operation which performs ACS processing by the PURISU can.
[0068] Moreover, the availability of memory is grasped, and when there are few the availabilities, the productivity at the time of copying the manuscript of two or more sheets continuously can be improved by having been made to perform processing which uses a PURISU can together.

[Translation done.]

* NOTICES *

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] however, with the above-mentioned conventional technique made unnecessary, a PURISU can From the ability of monochrome manuscript / color copy not to be distinguished, unless it is after reading all the manuscript images of one sheet in order to realize the function of ACS processing Since it was necessary to have the memory of capacity in which the image data of the maximum size (generally [in a copying machine] A3 size) of a manuscript can both be stored the object for B/W (black and white), and for FC (full color), the mass thing had to be used as memory. Furthermore, in copying continuously the manuscript for two or more pages with which monochrome manuscript / color copy is intermingled, the memory of the capacity which can store the image data for B/W and the image data for FC by two or more pages is needed.
[0006] This invention is made in view of the above-mentioned technical problem, and the place made into the object is to offer the image processing system which can realize ACS processing which made the PURISU can unnecessary, even if it does not have only the memory space in which the image data of the maximum size of a manuscript can both be stored the object for black and white, and for colors.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the outline of the configuration of the image processing system concerning 1 operation gestalt of this invention.
[Drawing 2] It is the outline block diagram showing the example of the image reader used as the image input section.
[Drawing 3] It is the outline block diagram showing an example of the image formation equipment of a tandem system.
[Drawing 4] It is a timing chart in the case of performing processing which uses a PURISU can together according to the availability of memory.
[Drawing 5] It is the flow chart which shows an example of a series of procedure in the image processing system concerning this operation gestalt.
[Description of Notations]
11 [-- The system control section, a 20 automatic manuscript feed gear (ADF), 53 / -- An image memory, 54 color discernment section (ACS)] -- The image input section (image reader), 12 -- The image-processing section, 13 -- The image output section (image formation equipment), 14

[Translation done.]

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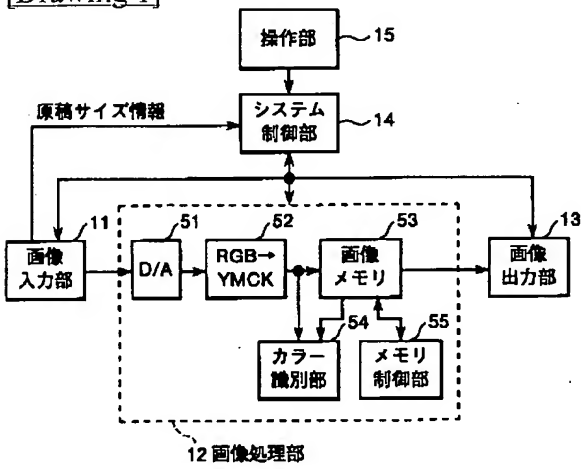
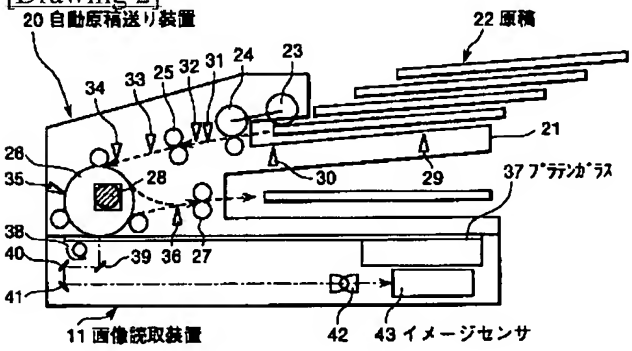
DRAWINGS

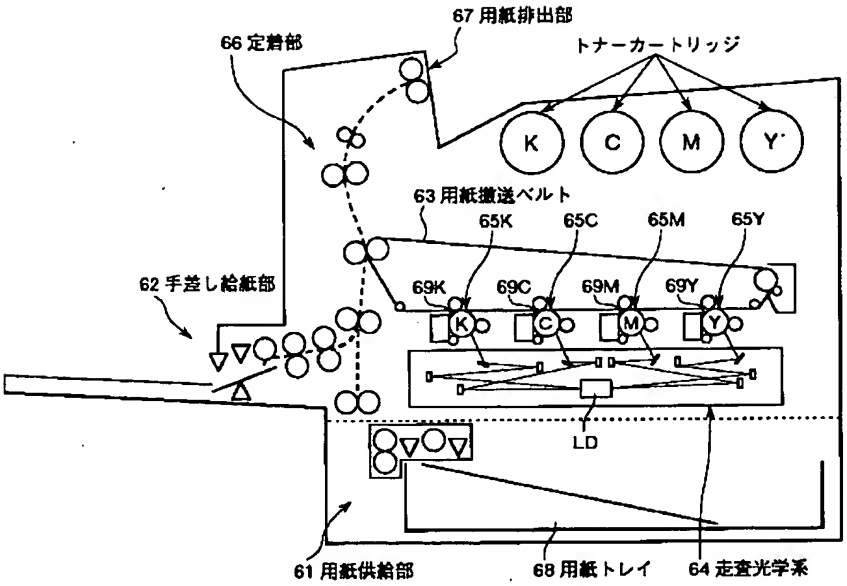
[Drawing 1]



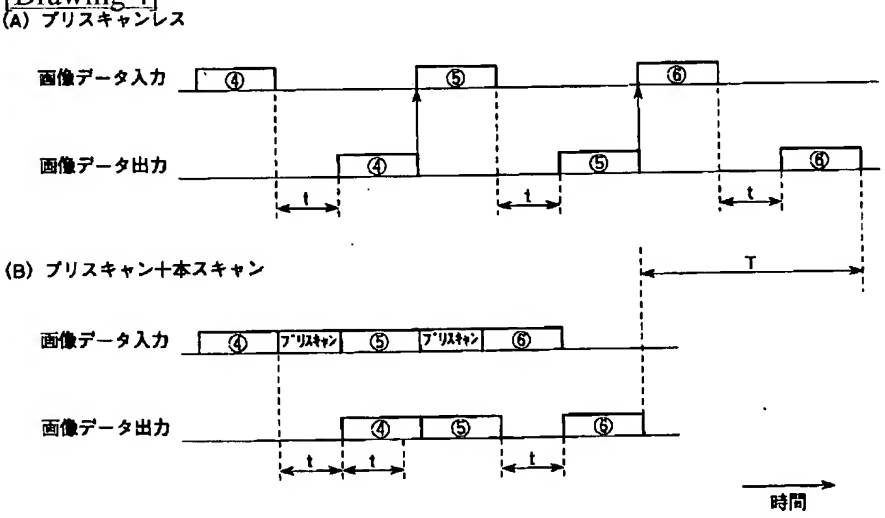
[Drawing 2]



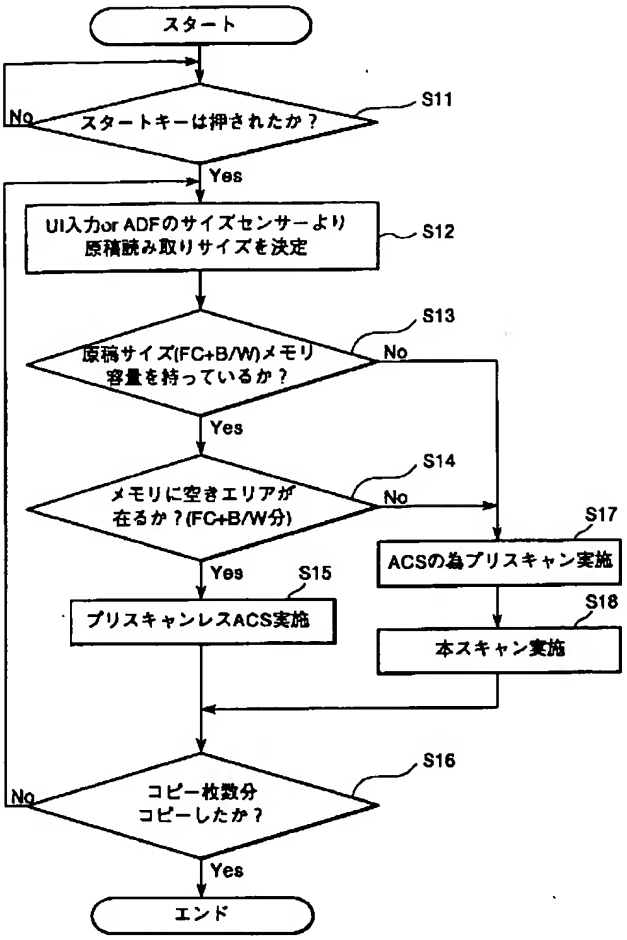
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]